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ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

THE ACADEMY OF NATURAL SCIENCES, PHILADELPHIA

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Notes on Clivina, with Description of a New Species from the Pacific Coast (Col., Carabidae).

By H. C. FALL, Tyngsboro, Massachusetts.

In rearranging parts of my collection to conform to the order in the new list, it became necessary to transfer my Clivinae to a new box. In so doing the species were examined somewhat critically, and certain errors in the last published table (by LeConte) were noted, to which it may be well to call attention.

The genus *Clivina,* fortunately perhaps, has long escaped the attention of systematists, and except for the placing of *collaris* Hbst. as a synonym of *fossor* L., the species stand in the Leng List just as left by Dr. LeConte in the table prepared with others for the Brooklyn Bulletin in 1879. As for *collaris* and *fossor,* these two introduced forms, though closely allied are now considered distinct by the best European authorities and are so recorded in the latest European Check List. Ganglbauer, in his *Coleoptera von Mitteleuropa,* gives the distinguishing characters, of which the rufous elytra with black suture in *collaris* is an all-sufficient criterion. *Fossor* is not so colored, the elytra being of nearly uniform tint, usually

piceous, but varying to rufous. I have seen numerous examples of *collaris* from Massachusetts, and a few of *fossor* from Montreal.

Briefly, the errors in the LeConte table are these—*collaris* (and also *fossor*) has a spur near the outer tip of the middle tibia and should therefore have been tabulated with the species possessing that character. *Striatopunctata* has the clypeal outline as well as the other characters of *ferrea, convexa,* etc., and should be included in the same group with them. *Rufa* should stand between *americana* and *morula.* It is intermediate in size between these two, and differs in no way except color from black examples of like size which may be placed either with *americana* or *morula,* according to personal judgment or caprice. It is highly probable that *morula, rufa, americana* and *cordata* represent nothing more than size and color variations of a single species.

Of the characters used by LeConte in the table referred to, that of the spur near the outer tip of the middle tibia is of importance and is correctly used except in the case of *collaris* alluded to above. The meaning of the next leading character used in the table—"clypeus with lateral lobes" or "clypeus rounded at sides"—is not quite so easily interpreted. There are in reality three types of clypeal outline. In the first, represented by *dentipes* alone, the clypeus is bi-emarginate or bilobed at sides. In the species *impressifrons* to *cordata* inclusive the sides of the clypeus are uni-emarginate, the posterior convex outline defining the lateral lobe. In the remaining species the structure differs from the preceding in that the anterior margin is but slightly advanced, leaving a very small notch or emargination at the angles, the lateral lobe thus occupying almost the entire side of the clypeus.

Certain other characters, not mentioned or only vaguely alluded to by LeConte, are so definite and simple in their application as to make them well worthy of consideration. Classified according to the dorsal setigerous punctures of the elytra the species separate as follows:

Elytra with five dorsal punctures.....*dentipes*
Elytra with four dorsal punctures.....*impressifrons* to *cordata*
Elytra with two dorsal punctures.....*striatopunctata* to *stigmula*

Or, the species may be grouped with equal definiteness by the anal ventral setigerous punctures. There are always four such punctures (two each side) regardless of sex, arranged as follows:

Intermediate anal punctures mutually twice as distant as from the lateral ones ..... *dentipes*
Anal punctures very nearly equally spaced.... *impressifrons* to *fossor*
Intermediate anal punctures widely distant and close to the lateral ones ..... *rufa* to *cordata*
Intermediate anal punctures close together at the middle of the apical margin ..... *striatopunctata* to *stigmula*

The last group—beginning with *striatopunctata*—is again sharply delimited by a character of such importance that the failure of LeConte to mention it is difficult to explain. The lateral marginal line of the thorax here fails to attain the true base, but turning inward forms a pseudobasal margin at the summit of an abrupt declivity very much as in certain genera of Anthribidae.

I would then divide our species of *Clivina* into four groups, giving each the name of its best known representative, as follows:

DENTIPES GROUP.—Middle tibia with subapical external spur; clypeus bi-emarginate at sides; front thighs acutely dentate beneath apically; elytra 5-punctate; intermediate anal setae twice as distant from each other as from the outer setae. Represented by *dentipes* only.

IMPRESSIFRONS GROUP.—Middle tibia with subapical external spur; clypeus uni-emarginate at sides; elytra 4-punctate; intermediate anal setae approximate to the lateral ones. Includes *impressifrons, texana, planicollis, punctulata, punctigera, rubicunda, pallida, collaris, fossor.*

Of these, *collaris* and *fossor* may be recognized by their color: *pallida* by having the ventral surface in great part polished (reticulato-alutaceous in all others); *rubicunda* by the very thick front thighs, which are convex both above and beneath and rather deeply sinuate apically beneath, also by the presence of diverging raised lines at the middle of the first ventral segment, these being otherwise present only in the *americana* group. The remaining species are closely allied and difficult to distinguish, and it is rather probable that *texanus* does not differ specifically from *planicollis.*

AMERICANA GROUP.—Middle tibia without subapical external spur; clypeus uni-emarginate at sides; elytra 4-punctate; intermediate anal setae approximate and distant from the lateral ones; first ventral segment with diverging raised lines at middle. Includes *analis, americana, rufa, morula* and *cordata.*

Analis is not known to me; the remaining forms are apparently identical in all respects except color and size and may be varieties of a single species.

BIPUSTULATA GROUP.—Middle tibia without subapical spur; clypeus rounded at sides almost throughout; prothorax with pseudobasal marginal line continuing the side margins which do not attain the extreme base; elytra 2-punctate; intermediate anal setae approximate. Includes *striatopunctata, ferrea, convexa, bipustulata, marginipennis, postica, stigmula.*

Putzey's species are practically unknown to us. They may perhaps be recognized by LeConte's table, but I suspect will in part prove not to be valid.

The following species in my collection is undescribed:

C. oregona new species.

Similar in form, size and general characters to *punctulata,* from which it differs as follows: The color is dark reddish brown to piceous brown, the prothoracic punctuation sparse, and so fine as to be barely perceptible; mentum strongly longitudinally carinate, the transverse posterior tumidity rectilinear; basal joint of protarsus without external dentiform prominence. In *punctulata* the color is bright red brown, prothorax distinctly punctulate, longitudinal carina of mentum feeble, the posterior transverse tumidity bisinuate behind, basal joint of protarsus with an external dentiform angulation.

Six examples of *oregona* are before me, the length varying from 4.8 to 5.5 mm. The *type* is from Corvallis, Oregon. Other examples are from Seattle, Wash. (Prof. O. B. Johnson). All in my collection.

The dentiform angulation on the outer side of the basal protarsal joint is a quite persistent feature peculiar to the species of the *impressifrons* group; its absence in *oregona* is therefore notable. *Oregona* may probably be safely determined by its locality label; the Californian *punctulata* is the only other species known from the Pacific Coast region and is rare at that.

A New Milliped of the Genus Polyxenus from the Florida Keys.

By RALPH V. CHAMBERLIN, Cambridge, Massachusetts.

In January, 1919, Dr. Paul Bartsch took a *Polyxenus* either emerging from or taking refuge in the breathing pore of a *Cerion* on the Tortugas, Florida. The specimen apparently represents a new species which is here described.

Polyxenus bartschi, sp. nov.

The type specimen is not fully adult, being in the stage possessing eight pairs of fascicles of lateral setae. It is in the Museum of Comparative Zoology, Cambridge, Massachusetts.

The dorsum is marked with a broad longitudinal stripe along each side and a narrow median pale stripe. Setae of caudal pencil white as usual.

The eight articles of the antennae present and apparently fully developed; the third, fourth, fifth, sixth, seventh and eighth articles respectively .04, .058, .05, .1, .05 and .02 mm. long, with the corresponding widths being .046, .05, .05, .058, .05 and .03 mm. The precise number of ocelli in the patch on each side of head was not determined because of the obscuring pigment.

The major and more numerous setae of the head are relatively slender and flexible with the teeth long, slender and numerous. subdensely appressed; the naked terminal lobe distally a little rounded. There are fewer short scales which are only four times, or less, as long as thick and are half or less the length of the long setae; their teeth are coarser and fewer in number.

The setae of the lateral fascicles are similar to the major ones of the head, but are mostly less flexible and with the lateral teeth usually fewer.

The setae across the tergites are in general similar to the shorter setae or scales of the head; mostly with seven or eight teeth in each lateral series, the terminal lobe with distal margin convex; mostly between four and five times longer than wide.

In the caudal pencils there are two principal types of setae. There are, firstly, the mostly peripheral setae very similar to those of the lateral fascicles excepting for their greater length. The greater portion of the pencils, however, is composed of much finer setae of varying length which have subspatulate distal ends which are usually a little bent. None of the characteristic hooked setae, such as occur in *P. lagurus* and *P. fasciculatus*, are present.

Length, without caudal pencil, 2 mm. Length of caudal pencil, .66 mm. Length of maximum setae of head, .2 mm.; of setae of anterior paired fascicles, .23 mm.; of posterior paired fascicles, .28 mm.; of the dorsal setae or scales up to about .1 mm.

A New Gall Midge on Rushes (Dipt., Cecidomyiidae).

By E. P. Felt, Albany, New York.

Very little is known of the host relations existing between gall midges and rushes, though the writer found a midge larva in the deformed fruit of a rush some years ago, but was unable to obtain the adult. The record given below is the first American species reared from *Juncus*. It is interesting to note that Houard in his monograph on The Plant Galls of Europe fails to list even one species from the Juncaceae. He records a number of species as having been reared from the Cyperaceae and in our tabulation of American species,[1] it will be noted that several species (4) have been obtained from plants in this family, while 33 have been reared from the grasses, Gramineae. The fauna of the last named is by no means thoroughly worked up and the probabilities are that careful collecting and rearing would result in material additions to our sedge-inhabiting forms and very likely some increase in the number of species occurring in rushes.

Procystiphora junci n. sp.

A series of these interesting midges was forwarded by Mr. W. H. Larrimer, West Lafayette, Indiana, accompanied by the statement that they resemble somewhat the Hessian Fly, as to appearance, the effect on the host plant and the two generations annually occurring at about the same time as in the case of this wheat pest. The specimens were labeled, "reared from *Juncus dudleyi*, Centralia, Ill., October 6, 1921, W. B. Cartwright, Collector, Centralia, No. 2111."

In spite of the general resemblance of these midges to the Hessian Fly, there is a striking chitinization and infuscation of the basal segments of the ovipositor, likewise apparent in the type of the genus, namely *P. coloradensis* Felt. The above food habit record tends to confirm the opinion of Prof. Cockerell to the effect that the host plant of the type of this genus is *Carex*. It would not be surprising if both species had a somewhat similar effect upon the host plant.

♂.—Length 2 mm. Antennae (possibly of this sex, though not cer-

[1] 1918, N. Y. State Mus. Bul., 200, p. 216.

tainly), about three-fourths the length of the body, sparsely haired, dark brown; sixteen and possibly eighteen segments, the fifth with a stem about three-fourths the length of the basal enlargement, the latter with a length about twice its diameter, and a sparse subbasal whorl of short, stout setae, and a median whorl of much longer, curved setae; terminal segment compound, produced, with a length over three times its diameter, a distinct constriction near the distal third and a short, broadly triangular process apically. Palpi: first segment short, irregularly quadrate, the second smaller than the first, the third a little longer than the second, somewhat swollen distally, and the fourth one-half longer than the third, more slender.

Mesonotum dark brown, the sub-median lines sparsely haired; scutellum and postscutellum dark brown, sparsely haired, reddish brown; the distal segments distinctly swollen; genitalia dark brown; wings hyaline, sub-costa uniting with the margin at the basal half, the third vein just before the apex of the wing, the fifth at the basal third, its branch near the basal half; halteres reddish brown, pale yellow basally; legs a nearly uniform dark brown; claws moderately long, slender, strongly curved, minutely unidentate; the pulvilli nearly as long as the claws.

Genitalia: basal clasp segment moderately long, stout; terminal clasp segment as long as the basal clasp segment, rather stout; dorsal plate long, deeply and triangularly emarginate, the lobes broadly rounded; ventral plate rather long, somewhat deeply and narrowly emarginate, the lobes broadly rounded; style rather long, stout, narrowly rounded apically.

♀.—Length 2.5 mm. Antennae extending to the base of the abdomen, sparsely haired, very dark brown; 17 subsessile segments, the fifth with a length nearly twice its diameter, the subbasal whorl of setae rather short, weak; the subapical whorl somewhat long; terminal segment produced, with a length about four times its diameter and terminating in a somewhat slender, irregular apex. Palpi: first segment short, irregular, the second quadrate, with a length about one-half greater than its width, the third nearly twice the length of the second, more slender, distinctly enlarged apically, the fourth twice the length of the second and more slender.

Mesonotum very dark brown; scutellum, postscutellum and abdomen dark reddish brown, the last almost black at its extremity (really the basal segment of the ovipositor), the tip of the ovipositor honey yellow; wings hyaline; costa dark brown, the third vein uniting with the margin a little before the apex of the wing, the fifth at the basal fourth, its branch near the basal half; halteres reddish brown, yellowish basally and apically; legs a nearly uniform dark brown; the claws rather long, moderately heavy, strongly curved, finely though distinctly unidentate; the pulvilli as long as the claws.

Ovipositor when extended probably about as long as the abdomen, the

basal segment apparently rather heavily chitinized and distinctly infuscated, the seventh abdominal segment with irregular fuscous, mesal thickenings dorsally and ventrally, the posterior margins of these distinctly produced laterally.

Type Cecid. A. 3209, N. Y. State Museum.

Described from a series of females and one broken male.

A few Notes on Distribution (Lepid.; Orth., Blattidae).

By W. J. Holland, Carnegie Museum, Pittsburgh, Pennsylvania.

As the author of a couple of manuals, which have had wide circulation, I am in constant receipt of letters from all over the country informing me of the discovery of insects at places beyond the limits of distribution given in *The Butterfly Book* and *The Moth Book*. Some of these notes made by correspondents are of interest. I regret that in past years I have not always preserved them and cannot, therefore, refer to them at this moment. It has occurred to me, however, that it might be worth while to mention a few of those, which during the past twelve months have been brought to my attention, and which I find upon my desk.

Rhopalocera.

Euptoieta claudia (Cramer) has been reported to me as found in Minnesota, the Dakotas and Alberta.

Argynnis idalia (Drury) was formerly regarded as a rarity in the vicinity of Pittsburgh. The species has been taken rather commonly in recent years in Allegheny and Washington Counties, in southwestern Pennsylvania.

Vanessa j-album Boisduval and LeConte. This insect has recently been found quite abundantly in western Pennsylvania in the vicinity of Pittsburgh.

Junonia coenia Hübner. This species is reported to me as occurring as far north as Minnesota and Dakota.

Charis borealis (Grote & Robinson). This insect has been taken abundantly in the vicinity of Columbus, Ohio. It has never been taken, so far as I know, in western Pennsylvania in the same latitude as Columbus, which is rather remarkable.

Nathalis iole Boisduval. This species ranges as far north as Davenport, Iowa.

HETEROCERA.

Erebus odora (Linnaeus). The capture of specimens of this species has been reported to me from Boston, Mass.; Toronto, Ontario; Central Wisconsin, Minnesota, and Alberta.

Thysania zenobia (Cramer). The capture of this moth has been reported to me recently from McPherson, Kansas.

It is possible that the presence of these moths in northern localities, far removed from their southern metropolis, may in part be accounted for by transfer by railroads. The moths, hiding in freight cars beginning their run in southern Texas and Florida, may be carried far north, and then, escaping, be captured. I have an *Erebus odora* taken at Leadville, Colorado, on July 4, in a snowstorm. It was sent me years ago by one of my correspondents.

ORTHOPTERA.

Panchlora cubensis Saussure. The Green Cuban Roach has been recorded from Indiana, Massachusetts, Vermont, Florida, and Texas. It is well established at Brownsville, Texas. It has been reported from Philadelphia (Rehn, Hebard) and Pittsburgh (Riley). It appears to have been introduced with bananas and other tropical fruit. My cook brought me a specimen the other day found to her horror in the kitchen. It probably found its way into the house from a fruit-store. This is the second record for Pittsburgh. The specimen was promptly consigned to a cyanide bottle. It is unlikely that this species will become established in this locality.

Observations on Dibelona cubensis Brunner, a little-known Cuban Gryllacrid (Orth., Tettigoniidae).

By JOSÉ CABRERA, Cotorro, Cuba.

The first time I found *Dibelona cubensis* was eight years ago, in Camoa, Havana Province. It was a very young specimen hidden under a leaf fastened to a palm tree trunk. Later in opening some leaves fastened together, and which I believed contained a chrysalid, I was surprised to find a cricket-like insect in them. I remembered at once what Dr. Gundlach said in his work on Cuban Orthoptera, about a locustid he found under leaves fastened to tree trunks in Yateras, Oriental Department of the island.

The specimens found by me were young, so I kept searching for a while and found, in a hollow twig, a fully mature female.

This I brought home, and put it in a glass jar with some leaves and fruit. Next day it appeared neatly enclosed in three leaves it had united. Then I knew I had *Dibelona cubensis* Brunner, a very rare species with this curious habit.

Sometimes the species is found a foot from the ground, at others high up in tall trees. It is very voracious, as once one of them ate a young *Haplopus cubensis* Saussure and a *Dellia insulana* Stål, which I had in the same jar with it. Sometimes the insect stayed enclosed in its house as long as six to seven days, but when disturbed it would move continuously up and down in the jar, jumping from side to side, and not falling to the bottom. Most of the young specimens I kept died during the moults.

A mature specimen, found September 11, 1921, gave me opportunity for these notes. In making its house it began by cutting the leaf to the required size, from the margin to the stem. The leaf was too long and the insect did not use two or three leaves as others did. Then it stood on the uncut side of the leaf, holding both sides of the leaf with the fore legs, by means of the tarsal claws; the holding is done from the center of the leaf, not from the margin. When using two or three leaves the insect stands on the stronger one. Then one sees it act as if chewing something; it is making the mucilaginous paste. After a few seconds the mouth is applied to the margin, and a thread-like fluid is seen to issue therefrom. This thread is attached to the opposite margin and the operation is continued, the labial palpi touching the threads and searching for openings and weak spots in the weaving. These are covered by forcing the leaf into position, where it is held by the threads. The insect's head goes regularly to and fro, stopping a while now and then to make more paste, then adjusting the margins again until the work is finished. When the leaf cover is completed the insect's body (21 millimeters long) is hidden, but not its antennae, which are very long (110 to 115 millimeters). By turning two or three times around inside the house, the antennae are rolled around its body.

Dibelona has an enemy, a hymenopterous parasite of the Microgastrine group, the larva of which feeds upon its body. With so many precautions it is often a victim of a tiny antagonist.

Observations on Two Mealy Bugs, Trionymus trifolii Forbes and Pseudococcus maritimus Ehrh. (Hom., Coccidae).

By W. S. Hough, State Crop Pest Commission, Winchester, Virginia.

There was a time not long since when all mealy bugs were thought to be restricted feeders, that is, each species was thought to be limited to a single host plant or at most to very few. Likewise, a single host plant harbored but one species. With this belief prevalent it is quite natural that when different mealy bugs were found on the same host they were considered different forms of the same species. As a result, cases of seasonal forms or seasonal dimorphism appeared in literature from time to time and were not openly questioned until Ferris (1918 a & b) presented evidence that probably all such cases involved two or more species. The history and literature of several typical cases is reviewed by Ferris in the articles referred to.

The first case of seasonal dimorphism was established by Davis (1894) in connection with his observations on the clover root mealy bug (*Trionymus trifolii* Forbes). He observed a "winter form" which was an "oval, plump, mealy, egg-like object" and a "summer form" having "white waxy filaments which project out from the body." Both of these "forms" were studied by the writer at Columbus, Ohio, and were kept under observation from October, 1920, until June, 1921. A summary of the information obtained follows. The study was made under the direction of Dr. Herbert Osborn. G. F. Ferris, of Stanford University, and Harold Morrison, of the Bureau of Entomology, examined specimens of *Pseudococcus maritimus* Ehrh., the so-called "summer form." The ants were identified by Dr. W. M. Wheeler.

Trionymus trifolii Forbes.

In life the *adults* vary from 2 mm. to 3 mm. in length, are oval, plump, and when viewed laterally appear somewhat cylindrical. The flesh-colored body is covered by a white wax powder. There is but a single pair of white caudal tassels which usually vary from one-eighth to one-fifth of the length of the body. These tassels are frequently

curled and lie so close to the body as to be easily overlooked. The short antennae are inconspicuous, about .15 mm. long, seven-segmented and straw-yellow in color. The legs are very short and straw-colored.

Although the adults are sluggish the *young* are active and move from one part of the plant to another. At birth the young are .4 mm. long, a bright pale yellow, flat rather than plump and cylindrical, have six-segmented antennae and legs which in proportion to the body are much more conspicuous than the legs of the adult.

Adult specimens were placed on the roots of small clover plants which had been transplanted into straight-edged vials. A single specimen was placed in each vial and the vial wrapped with black paper. Water was introduced from one to three times daily as the needs of the plant required. Eight adults brought from a clover field on February 14 began giving birth to young one month later, March 12 to 15. The total number of young produced was recorded daily for two individuals, one produced 131 larvae in 23 days and the other 162 larvae in 17 days. The other six adults gave birth to young over a period averaging 17.8 days and all died within three or four days after the last young appeared.

Within a short time, a few hours to a day, after birth the young left the flimsy cottony mass beneath the body of the mother and migrated to the stems and leaves where feeding began. About one week (20 individuals averaged 7.7 days) later the first molt occurred and within another week (28 individuals averaged 6.8 days) the second molt occurred, after which most of the larvae migrated down to the upper roots, on the crown and beneath the bracts around the base of the stems. Because of this migration it was with difficulty that only four individuals were followed through the third larval stage which averaged 12.2 days. These were kept under observation for five weeks after the third molt, when the writer left Columbus. During this time they had assumed the appearance of adults except for reduced size, being only 1.7 mm. long. Overwintering adults were from 2 mm. to 2.5 mm. in length and before young were produced in the spring the average length was increased to 3 mm. No males were observed.

In October adults, but no young, were common on the roots of clover two years old or older. They were always asso-

ciated with the brown garden ant (*Lasius niger* Linn. var. *americanus* Emery) which had mined tunnels along all of the roots on which the mealy bugs were feeding. December 13 was the last fall date when any were found on the roots, and not until early in March did they again appear on the roots. By the last of March they were easily found within an inch of the surface and during the first week in May they began to produce young, which within a few hours' time deserted the subterranean life to pass the first larval stage, and in some cases the second larval stage, on the stems and leaves. Continual search throughout the winter revealed the fact that all of the adults had been collected by the ants and placed in specially constructed chambers from 10 inches to 12 inches below the surface. As spring approached the ants replaced them on the roots, bringing them nearer the surface as the weather became warmer. Not only did the ants extend their numerous tunnels along the roots of clover but sometimes included in their tunnel system the roots of dandelion, plantain and blue grass, on all of which the mealy bugs were found feeding. Mr. P. R. Lowery informs me he found this same species on sunflower roots.

In order to more closely observe the relationship existing between the ants and the mealy bugs three ant colonies, whose nests were about the roots of clover, were transferred to the insectary. The plants in two of the nests were then killed by keeping them very closely clipped. In both instances the ants tunneled to the living roots of surrounding clover plants, which were not less than eight inches away, and transferred their mealy bugs to the living roots. At the same time ten mealy bugs were placed on the roots of a living clover plant, which was then kept closely clipped. Although this dying plant was entirely surrounded by living plants not over eight inches away, all of the mealy bugs died with the dying plant. A repetition of this gave the same result and in both tests nothing but loose earth was between the living and dying roots. The mealy bugs have never been found unattended by ants and it seems they have ceased foraging for themselves. On the other hand, the ants depend on the profuse honey dew as one of their chief foods.

Honey dew is produced freely. After the third molt it was necessary to remove the colorless liquor daily from the specimens which had been placed in vials. Some of the adults from which the honey dew was not removed finally perished in the viscous mass.

Certain factors as humidity and temperature no doubt determine the movements of the ants with their mealy bugs. One cloudy morning in November the ants in the third nest, which had been transferred from a clover field several weeks before, moved their 24 mealy bugs over a surface path from the nest in a flower pot to a newly constructed tunnel in a bean bed two feet away. After watching this transfer a careful examination of the new tunnel revealed all of the mealy bugs stored in three cells. Three days later the sun was shining and the ants carrying their mealy bugs returned over the same path to the clover roots in the flower pot. Both movements took place at 8 A. M.

Pseudococcus maritimus Ehrh.

At various times during the fall months and frequently during the spring months the "flat" mealy bug with lateral "filaments which project out from the body" was found associated with the clover root mealy bug. As already stated, this "summer form" proved to be none other than the Baker mealy bug (*Pseudococcus maritimus* Ehrh.) which Ferris has reported from the Pacific coast (1918), New York (1918), Florida (1919), England (1919) and Lower California (1921).

During the progress of this study in Ohio it was taken from sycamore, elder, osage orange and the roots of clover and in Virginia it has since been found ovipositing on the green bark of apple trees. On two occasions it was ovipositing in the stem end of apples. Mr. P. R. Lowery, who has collected mealy bugs in Ohio for several years, informs me that he has collected it from the following additional hosts: Flowering dogwood, roots of goldenrod, hackberry, hazelnut, hickory, maple, *Rhododendron maximum* and wild cherry. In the botanical greenhouse at Ohio State University it ranks second to *Pseudococcus citri* Risso as a mealy bug pest. In this greenhouse it was found on 26 different host plants. The common name, "omni-

vorous mealy bug," which was once aptly applied to this insect, is not a misnomer. It is now recorded from 80 hosts and the list is far from complete. In the Shenandoah valley of Virginia it far outnumbers the clover root mealy bug on the roots of clover, but in central Ohio the latter was more abundant.

In life this species is very easily distinguished from the clover root mealy bug. The *adults* vary from 2 mm. to 6 mm. in length, width approximately half the body length, elongate oval when viewed dorsally and somewhat flattened from a lateral view. The reddish-brown body is covered with a white wax powder and around the body margin are 17 pairs of lateral tassels or filaments, which increase in length toward the posterior end, the caudal pair being from one-half to two-thirds as long as the body. The eight-segmented antennae are about one-fifth as long as the body and similar in color. The legs are slightly lighter.

Immature forms have the general appearance of the adults. First and second stage larvae have six-segmented antennae and larvae of the third stage have seven-segmented antennae. The caudal tassels make their appearance in the first larval stage and late in the second stage are nearly as long as those of the adult. Except for reduced size third stage larvae are similar to the adults.

The *males* are minute winged forms, 1.3 mm. in length, with a white pair of caudal tassels equal to two-thirds the length of the body They are active fliers, without functional mouthparts, and live for a few days only.

Since the life history has been studied in California (Clausen, 1915) a brief summary of observations made under Ohio conditions is given here. Specimens and eggs transferred from sycamore to clover were reared on the latter in the insectary, where the temperature fluctuated from 45 degrees to 90 degrees Fahrenheit. The complete life cycle from egg to egg averaged 85.5 days for six individuals. As spring approached this time was shortened. Winter was passed in every stage of development. As cold weather approached every stage of development was retarded, the immature forms and adults alike became very sluggish and inactive. None were ever found stored in ant nests. Eggs collected on December 1 and kept in a shaded place outdoors did not hatch until the middle of March.

Although found associated with the clover root mealy bug on the roots of clover, the ants rarely carried this species about. When a colony was disturbed the ants lost no time in carrying the clover root mealy bug to a place of safety, but the Baker

mealy bug was usually left to shift for itself. The latter does not produce honey dew as profusely as the former.

When disturbed or handled rather roughly both species would eject from one to four dorsal globules over the location of the dorsal ostioles. When the ants touched these liquid globules they were invariably repelled while at the same time the anal secretion of honey dew was always eagerly accepted. As a rule honey dew was ejected in response to a gentle stroke of a stiff hair or needle, but when the treatment became too severe the dorsal globules were suddenly ejected, the ostiole nearest the point of disturbance being the first to respond.

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Insects of the Yellow Thistle (Hem., Col., Lepid., Dip., Hym.).

By O. W. ROSEWALL, Louisiana State University, Baton Rouge, La.

Practically throughout the entire state of Louisiana one can find the plants of the Yellow Thistle (*Carduus spinosissimus* Walt.) growing at some time during the year, and in the southern part of the state the prickly green leaves may be found during the whole year, except when heavy frosts destroy them. In the spring, during the flowering season, they are very noticeable, especially in pastures and along the roadside where they stand as sentinels because the cattle have eaten the surrounding

vegetation. The following statements taken from Britton and Brown's *Illustrated Flora of the Northern States and Canada* give the technical description of the plant:

Biennial or perennial, somewhat wooly when young, but becoming glabrate; stem branched, leafy, 2 ft. to 5 ft. high. Leaves green both sides, lanceolate or oblong in outline, sessile and clasping or the basal ones short-petioled and somewhat spatulate pinnatifid into triangular or broader, spinulose-margined and prickle-tipped, entire or dentate lobes; heads involucrate by the upper leaves, 2 to 4 inches broad, 1¼ to 1½ inches high; bracts of the involucre narrowly lanceolate, roughish and ciliate, long-acuminate, unarmed; flowers pale yellow, yellowish, or occasionally purple.

In moist or sandy soil, Maine to Pennsylvania, Florida and Texas. Abundant along the edges of salt-meadows in New York and New Jersey. May-August, or earlier in the South.

In Louisiana this plant is attractive to very few animals; however, certain insects may be found feeding on or visiting this plant. The collections of these insects* were made by the author in the vicinity of Baton Rouge, Louisiana, including the levee along the Mississippi River, and all dates in this paper are of the year 1920.

HEMIPTERA.

Acanthocephala declivis Say. (Coreidae.) Mar. 29. Several specimens taken on leaves. May 4. Numerous.

Agallia constricta Van D. (Cicadellidae.) Mar. 29. Few.

Euschistus bifibulus P. B. (Pentatomidae.) Mar. 29. Common.

Euschistus ictericus L. Mar. 29. One specimen taken.

Euschistus servus Say. Mar. 28. Common. April 20. Numerous, copulating. May 4 and 20. Common. Specimens practically on every plant.

Euschistus tristigmus Say. Mar. 28. Two specimens.

Entylia concisa Walk. (Membracidae.) Mar. 29. Common.

Leptoglossus phyllopus Linn. (Coreidae.) Mar. 28 and 29. Numerous all over plants.

Myzus braggii Gillette. (Aphididae.) April 8. Some of the plants almost covered with this aphid.

Nezara viridula L. (Pentatomidae.) Mar. 29. Few. April 8. Common.

Phymata wolfii Stal. (Phymatidae.) April 8. Occasional specimens found in flowers.

Repipta taurus Fab. (Reduviidae.) April 20. One specimen.

*The author is indebted to the following for some identifications: Dr. J. M. Aldrich, Dr. H. G. Dyar, W. L. McAtee, H. L. Viereck.

COLEOPTERA.

Acmaeodera tubulus Fabr. (Buprestidae.) April 29. One specimen in flower.

Anthonomus suturalis Lec. (Curculionidae.) April 20. One specimen in flower.

Aphelogenia vittata Fab. (Carabidae.) Mar. 29. In axil of leaf.

Baris dicipula Csy. (Curculionidae.) Mar. 29. Few in axil of leaves.

Bruchus obtectus Say. (Bruchidae.) Mar. 29. Single specimen on leaf.

Calandra oryzae L. (Curculionidae.) April 8. Few in axil of leaves.

Chalcodermus aeneus Boh. (Curculionidae.) Mar. 29. One specimen in axil of leaf.

Chariessa pilosa Forst. (Lampyridae.) Mar. 29. Several specimens on leaves.

Chauliognathus marginatus Fab. (Lampyridae.) Mar. 29. One or two specimens on each plant. April 1. Very numerous and copulating.

Coccinella sanguinea L. (Coccinellidae.) Mar. 28, May 4 and April 1. Occasionally seen on all plants and numerous on those infested with aphids.

Diabrotica balteata Lec. (Chrysomelidae.) April 1. Few. Feeding on leaves.

Diabrotica 12-punctata Oliv. Feb. 4. Two specimens feeding on leaves. April 8. One or more specimens on every plant inspected.

Disonycha glabrata Fab. (Chrysomelidae.) April 8. One specimen taken in axil of leaf.

Disonycha quinquevittata Say. April 1. One specimen on leaf.

Drasterius elegans Fab. (Elateridae.) Mar. 29. Few.

Euphoria sepulchralis Fab. (Scarabaeidae.) April 20. This beetle is found in practically all mature flowers and occasionally two or three specimens may be removed from one head. They burrow deep in the flowers.

Lebia marginicollis Dej. (Carabidae.) April 8. One specimen on leaf.

Lebia viridis Say. April 8. One specimen on leaf.

Lema sayi Crotch. (Chrysomelidae.) April 8. One specimen in axil of leaf.

Limonius auripilis Say. (Elateridae.) April 20. One specimen on leaf.

Lina scripta Fab. (Chrysomelidae.) Mar. 29. Occasional specimens found in axils of leaves.

Megilla maculata Dej. (Coccinellidae.) Mar. 28. Common.

Myochrous denticollis Say. (Chrysomelidae.) Mar. 29. Common in axil of leaves.

Pyropyga decipiens Harr. (Lampyridae.) May 4. Several specimens taken in flowers.

Statira gagatina Mels. (Lagriidae.) April 20. One specimen in blossom.

Uloma mentalis Horn. (Tenebrionidae.) Mar. 29. One specimen on leaf.

LEPIDOPTERA.

Autographa biloba Stephens. (Noctuidae.) Caterpillar collected on April 8 while feeding on the leaves. Reared in insectary and moth emerged April 20.

Homoeosoma electellum Hulst. (Pyralidae.) Caterpillar collected on May 21 while feeding in base of bud. Reared in insectary and moth emerged June 2.

Phlyctaenia ferrugalis Hbn. (Pyralidae.) Caterpillar collected April 8 while feeding on leaves. Reared in insectary and moth emerged April 23.

DIPTERA.

Carphotricha culta Wd. (Trypetidae.) When present they may be found resting on the various parts of the plant. April 8. Common. May 17. Reared several adults from pupae which had been taken from the interior of the base of the dried up flowers.

Chrysops flavidus Wd. (Tabanidae.) April 30. One specimen taken on flower.

Eutreta sparsa Wd. (Trypetidae.) May 21. Occasional specimens on flowers.

Dilophus orbatus Say. (Bibionidae.) April 8 and 20. Numerous on all parts of plant.

Hydrotaea houghi Malloch. (Anthomyidae.) April 20. One specimen taken on flower.

Lucilia sericata Meig. (Muscidae.) April 8 and 20. Common on flowers.

Phormia regina Meig. (Muscidae.) April 8. Common on flowers.

Pseudopyrellia caesariana Meig. (Muscidae.) April 20. Common on flowers.

Rhamphidia flavipes Macquart. (Tipulidae.) Mar. 29. Very numerous. Ofter 50-75 individuals on a single plant would have a synchronic motion, moving the bodies up and down as if the legs were springs.

Sarcophaga quadrisetosa Coq. (Sarcophagidae.) April 20. One specimen taken on flower.

Tipula sp. ? (Tipulidae.) Mar. 29. A few specimens taken among the numerous *R. flavipes.*

Trypeta palposa Loew. (Trypetidae.) April 20 and 22. Common. Reared adults from pupae collected with the pupae of *C. culta* Wd. from interior of mature flower buds.

HYMENOPTERA.

Apis mellifica Linn. (Apidae.) April 1. An occasional bee in the flowers, but at no time have they been numerous.

Agapostemon virescens Fab. (Halictidae.) April 20. Common on flowers.

Bremus pennsylvanicus DeGeer. (Apidae.) April 1. Occasional.

Camponotus pennsylvanicus DeGeer. (Formicidae.) April 20. A single winged specimen taken on leaf.

Halictus ligatus Say. (Halictidae.) April 20. Occasional.

Iridomyrmex humilis Mayr. (Formicidae.) Common at all times on plants along river.

Megachile brevis Say. (Megachilidae.) Mar. 29. Occasional.

Oxystoglossa sp ? (Halictidae.) April 20. Three specimens on flowers.

Xylocopa micans LeP. (Xylocopidae.) April 1. Occasional.

No doubt there are many more insect visitors and insect enemies of this plant than are listed in this paper for this locality, and the list would increase with the inclusion of more territory, but the author feels that this list may lead others to watch this plant more carefully.

In concluding it is well to state that there are other animals who visit or live in the vicinity of this plant, *e. g.*, under the decaying leaves at the base are usually to be found sow-bugs, millipedes, centipedes and snails. The snails are often numerous on the plants near the river.

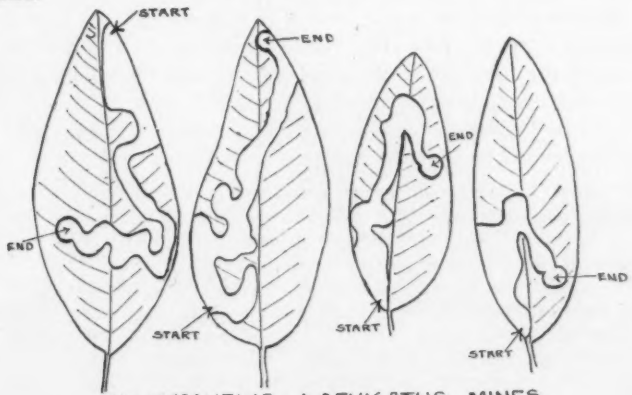
Notes on the Desmodium Leaf Miner, Pachyschelus laevigatus (Say) (Col.: Buprestidae).

By HARRY B. WEISS and ERDMAN WEST, New Brunswick, New Jersey.

This member of the *Buprestidae* which ranges from southeastern Canada to Florida and west to Iowa is common throughout New Jersey and can be found from the last of May until the first week of July on and in the vicinity of *Meibomia canadensis* (L.) (*Desmodium canadense*). Blatchley records the adults on the foliage of black gum and the flowers of black haw, milkweed, etc., and Chambers records it as mining *Desmodium*. At Rutherford, New Jersey, we found it mining the leaves of *Desmodium pendula*. At Fairlawn, New Jersey, adults were numerous on *Lespedeza capitata*, and

at Boonton, New Jersey, mines were noted on *Lespedeza bicolor,* but it is not known definitely if they were the mines of *laevigatus.* At Monmouth Junction, New Jersey, several clumps of *Meibomia canadensis* growing along a railroad embankment were heavily infested by *P. laevigatus* (Say) and the following notes are the results of observations made for the most part at this place during 1921.

Adults appear about the last week of May and first week of June and feed on the upper surfaces of the leaves, leaving nothing but the lower epidermis which becomes reddish and in the course of time somewhat ragged due to the tissue drying and breaking. Copulation takes place during the last half of June, and by the first week of July small larvae can be found. The eggs are inserted in a little pocket made usually in the lower surface near the edge of the leaf. The subcircular, nearly flat, jelly-like egg is deposited under a thin layer of tissue. Both the tissue above and below the egg are pushed out slightly and this results in somewhat flat, oval-like blister or swelling which is visible on both leaf surfaces. The tissue over the egg on the lower leaf surface becomes dry and whitish, while the upper surface of the blister becomes somewhat reddish.



PACHYSCHELIS LAEVIGATUS MINES IN DESMODIUM

The mine is started from the egg pocket and later extended in a somewhat irregular and linear manner. By the middle of July most of the larvae are nearly three-quarters grown and by the last of July many are full grown and the mines are completed. On the upper leaf surface the mines appear as dry, brown, irregularly linear areas. A few are blotch-like. The number of mines in a leaf varies from one to three, but is usually only one.

When the greenish larva is full grown it hollows out a circular cavity at the end of the mine. Such cavities are about five or six millimeters in diameter. In this place it constructs a circular, somewhat flat, thin, tough, parchment-like cocoon about four millimeters in diameter. These cocoons push out the upper and lower leaf tissues somewhat into comparatively large blister-like swellings. By the first week of August all of the larvae are in these cocoons. At this time the tissue over the linear mines starts to break up and this, together with the feeding which took place earlier in the season, cause the leaves to turn entirely brown and start to curl up toward the midrib.

After the larva enters its cocoon it shrinks longitudinally into a semiquiescent, compact, prepupal stage, in which it remains until the following spring, when it transforms to a pupa. The prepupal stage is long and lasts almost from the first of August until the following May. By the first week in September the cocoon with the dried leaf tissue over it somewhat resembles a *Desmodium* seed in color and shape. Later the leaves containing the cocoons and in fact all of the leaves fall to the ground and here the prepupa passes the winter.

Egg.—Width, 0.5 mm. Subcircular, flat, sides slightly convex; chorion apparently smooth; transparent when first laid, later becoming translucent and whitish. The egg resembles a flattened globule of water, but of thicker consistency.

Larva.—Length 6 to 7 mm. Width across middle of body about 1.7 mm. Flattened, spindle-shaped, tapering both ways from about the middle, more acutely posteriorly; each segment slightly convex dorsally and ventrally; body deeply notched, composed of thirteen well-defined segments; legs absent; ocelli absent; color light green. contents of alimentary canal sometimes showing as median dark green line; first segment narrower than second; first segment with well-defined, large, subquadrate plate on dorsal and ventral surfaces, dorsal

plate apparently smooth, ventral plate bearing transverse rugosities; head small, retracted into first segment; antennae three-jointed; labrum comparatively large, protruded; mandibles short, strong, somewhat spoon-shaped, bifid at apex; maxillary palpi two-jointed; labium somewhat protruded; spiracles, one large one on each side of second segment and a smaller one on each anterior dorso-lateral surface of segments four to eleven. The embryonic larva appears to be more characteristically "buprestid" in shape. Viewed through the transparent covering, the anterior third of the body is wide and flat and the remaining two-thirds narrow and tail-like, folded against anterior third. After hatching it becomes oval.

Pupa.—Length about 3 mm. Width about 1.6 mm. Color whitish; shape oval, like that of adult. Abdomen terminated by a pair of minute tubercles; remainder of body apparently devoid of hairs or spines.

Adult.—Pachyschelus laevigatus. This was described by Say in 1836 (Trans. Am. Phil. Soc., vol. vi, p. 164). The original description was recently published by Nicolay and Weiss in their review of the genus *Pachyschelus* (Jour. N. Y. Ent. Soc., vol. xxviii, p. 140, 1920) and need not be repeated here.

On Anomalies in Wing Markings of Basilarchia astyanax Fab. (Lepid., Rhop.: Nymphalidae).

By WARO NAKAHARA, New York City.

Among some fifty specimens of *Basilarchia astyanax* Fab. (= *Limenitis ursula* Godt.) collected by me at Elmhurst, Long Island (near New York City) during the early part of August, 1921, two interesting aberrant specimens have been found. In one there is a complete submarginal row of red spots to the hindwing, upperside, exactly as in *B. arthemis* Dru. The specimen is a male with appearance entirely typical of *astyanax*, excepting the character just mentioned. In the other, a female specimen, there are elongated conspicuous red patches, one in each interspace, on the underside of the hindwing. This specimen appears typical of *astyanax*, as far as the upperside is concerned. Needless to say that almost every intergradation has been found between the typical *astyanax* and the two extremes here described.

It is well known that in form *proserpina* Edw. of *arthemis* the white bands are often completely obsolete, thus closely resembling *astyanax*. The only difference between the two species then consists of the presence in *arthemis* and the absence

in *astyanax* of the red spots on the upperside of the hindwing. Therefore I would have referred the first specimen described above to *B. arthemis* f. *proserpina* Edw., if it were not for the fact that the specimen was found in company with numerous examples of *astyanax* and not of *arthemis*. Besides, as far as I am aware, *arthemis* has not been found to occur in the vicinity of New York City.

The occurrence of a *proserpina*-like form within a population of *astyanax*, which is not mixed with *arthemis*, is rather interesting. This fact, coupled with the well-known variability of *arthemis* itself and the geographical distribution of the two butterflies, seems to suggest that they represent two local races (sub-species) of a single species: *B. arthemis arthemis*, the northern, and *B. arthemis astyanax*, the southern race.

Another point that might be brought up in connection with the variability of the reddish markings in *astyanax* is the question of mimicry in the genus *Basilarchia*. The well-known resemblance of *B. archippus* to *Danais* (*Anosia*) *plexippus*, long believed to be a case of mimicry, has come in recent years to be looked upon with much skepticism. There has been no positive ground for the hypothesis of mimicry to begin with, and in the case of *archippus* especially it has been shown that in the ancestral form, *B. arthemis*, which *archippus* is supposed to have sprung from, the reddish markings show no such wide variability as called for by the hypothesis of gradual change by natural selection. That *astyanax* shows much variation in its reddish markings would seem to open a path for the hypothesis, which, however, does not seem to meet the condition. For the past three years, in the vicinity of New York City, *archippus* has been observed more commonly than *plexippus*. The time of appearance, too, seems to be different in the two species, they being seldom seen flying at the same time. Moreover, of the two Basilarchias occurring in this region, the "unprotected" *astyanax* is by far commoner than the supposedly protected *archippus*. A question arises: Does *archippus* derive any benefit from its resemblance to *plexippus?* With these facts at hand, it might be well to consider if *archippus* is so different in the markings from other congeneric forms as to require some special explanation. Is not *Vanessa antiopa*, for instance, different enough from other Vanessas to demand a special hypothesis to account for its unique coloration?

It is not within the scope of this short note to go into this question any deeper. Suffice it to say that, while *astyanax* shows wide range of variability in the reddish element of its wing markings, this fact by itself offers no argument for the supposed mimetic nature of the coloration of *archippus*.

ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., JUNE, 1922.

Collect Data First, Specimens Second.

When this number of the NEWS reaches its readers *the* collecting season will already have been under way for some weeks. Indeed some kind of entomological collecting is possible at almost all seasons of the year. It is, therefore, never too late to remind collectors that in most cases the data which they may obtain with their specimens (if they will) are more important and more valuable than the animals (insects) themselves. To be sure, as an illustration of morphology or of a taxonomic unit of some sort, a specimen, unaccompanied by any data as to its habitat, its time of occurrence, its relations to its surroundings, has a certain value, but from any other viewpoint such a naked object is useless. All of the most interesting sides of entomology, of biology, are based upon the observations made in connection with the living thing and its surroundings, and the more completely these are recorded in connection with the specimens the better.

Dr. A. G. Ruthven, in his *Report of the Director of The Museum of Zoology* of the University of Michigan, for the year ending June 30, 1921, makes a strong and interesting appeal for "Geography in Museums of Zoology," saying among other things:

> Specimens accompanied by geographic data are more valuable for taxonomic investigations than those without this information, . . . such data are indispensable for geographic studies, . . . it is an anachronous practice to continue the piling up of records of a kind once thought to be adequate but now known to be inadequate for the purposes which they should serve.

The University of Michigan-Williamson Expedition to Brazil.

Mr. Jesse H. Williamson's letters from February 13 to March 1 state that Captain Strohm and he were still at Porto Velho, Brazil (see the NEWS for April, page 104). There was much rain and the opinion was expressed that there would be no collecting along or near the big rivers till they dropped 30 or 40 feet. On March 1 they estimated their collections of insects as comprising 2000 specimens of Odonata of 83 species and a few ants, beetles, grass-hoppers, crane-flies and cicadas; also a few spiders.

On March 5 they left Porto Velho by the Madeira-Mamoré Railway for Abuná, 220 kilometers to the southwest, in the State of Matto Grosso. This place is given as Abunan on the National Geographic Society's map; its official name is Presidente Marquez; it likewise is on the Madeira River. At first there were only light showers here, but after a week heavy rains fell putting even the woods trails a foot or more under water.

On March 15, Drs. Mann, Pierson and White of the Mulford Exploration arrived in Abuná, on their homeward way, and continued their journey to Porto Velho the next day. A "gab fest" between the two expeditions is reported.

In spite of the unfavorable weather their Odonata numbered 2945 specimens on March 14 and 3616 on March 26.

On March 27 they continued up the railway to Villa Martinho, where there is no hotel as at Porto Velho and at Abuná, and found quarters in a restaurant. Villa Martinho is 93 kilometers from Abuná. In these river towns the railway is the only foot highway.

A Request for Exchanges with Russia.

The Permanent Bureau of All-Russian Entomo-Phytopathological Congresses, Liteyny, 37-39, Room 59, Petrograd, Russia, desires:

1. To *exchange printed matter* (published since 1914) on entomology, phytopathology, mycology and zoology, with American Colleagues, Scientific Societies, Agricultural Experiment Stations, Museums of Natural History, Periodicals, etc.

2. To receive from *American publishers catalogues* and specimen numbers of various publications on the above mentioned subjects.

3. To receive *catalogues* and price-lists from American firms dealing in various *apparatus and chemicals* used in combating the plant injurers.

The above mentioned Permanent Bureau has supplied credentials to Mr. D. N. Borodin (who also represents the Bureau of Applied Botany of the Russian Agricultural Scientific Committee, Petrograd) to collect literature in this country and give all the necessary information to American Colleagues, concerning the entomological work conducted in Russia and to organize an exchange of literature.

Mr. Borodin will accept all packages of books, bulletins, etc., for

Russia, if they will be addressed to him at No. 110 West 40th Street, Room 1603, New York City.

[The Editors are aware that there has been difficulty in sending and receiving scientific papers to and from Russia, and will be glad if Mr. Borodin succeeds in reopening communication with that country.]

Entomological Literature

COMPILED BY E. T. CRESSON, JR., AND J. A. G. REHN.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded.

The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

The records of papers containing new genera or species occurring north of Mexico are grouped at the end of their respective Orders.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

The titles occurring in the Entomological News are not listed.

5—Psyche, Cambridge, Mass. **7**—Annals of The Entomological Society of America, Columbus, Ohio. **8**—The Entomologist's Monthly Magazine, London. **10**—Proceedings of the Entomological Society of Washington, D. C. **11**—Annals and Magazine of Natural History, London. **12**—Journal of Economic Entomology, Concord, N. H. **13**—Journal of Entomology and Zoology, Claremont, Cal. **15**—Insecutor Inscitiae Menstruus, Washington, D. C. **16**—The Lepidopterist, Salem, Mass. **22**—Bulletin of Entomological Research, London. **24**—Annales de la Societe Entomologique de France, Paris. **28**—Entomologisk Tidskrift, Uppsala. **39**—The Florida Entomologist, Gainesville, Florida. **45**—Zeitschrift fur wissenschaftliche Insektenbiologie, Berlin. **50**—Proceedings of the United States National Museum. **52**—Zoologischer Anzeiger, Leipsic. **62**—Bulletin of the American Museum of Natural History, New York. **68**—Science, Garrison on the Hudson, N. Y. **69**—Comptes Rendus, des seances de l'Academie des Sciences, Paris. **70**—Journal of Morphology, Philadelphia. **72**—The Annals of Applied Biology, London. **73**—Proceedings of the Linnean Society of New South Wales, Sydney. **77**—Comptes Rendus des seances de la Societe de Biologie, Paris. **80**—Revue Suisse de Zoologie, Geneve. **82**—The Ohio Journal of Science, Columbus, Ohio. **85**—The Journal of Experimental Zoology, Philadelphia. **87**—Arkiv for Zoologi, K. Svenska Vetenskapsakademien, Stockholm. **88**—Occasional Papers of the Museum of Zoology, University of Michigan, Ann Arbor. **89**—Zoologische Jahrbucher,

Jena. **91**—The Scientific Monthly, Lancaster, Pa. **104**—Zeitschrift fur Wissenschaftliche Zoologie, Leipzig. **114**—Entomologische Rundschau, Stuttgart. **115**—Societas Entomologica, Stuttgart. **125**—Verhandlungen del zoologisch-botanischen Gesellschaft in Wien. **138**—American Museum Novitates. **139**—Bulletin of the Southern California Academy of Sciences, Los Angeles. **140**—Sitzungsberichte der Gesellschaft Naturforschender Freunde zu Berlin.

GENERAL. Borodin, D. N.—The present status of entomology and entomologists in Russia. **12,** xv, 172-6. **Distant, W. L.**—Obituary notice. **8,** lviii, 66-67. **Handschin, E.**—Zur nomenklaturfrage. **115,** xxxvii, 9. **Louisiana Entomological Society.** [An account of the society by T. E. Holloway]. **68,** lv, 436. **Pierce, W. D.**—Lectures in applied entomology. Collection. Ser. 1, Pt. 1, No. 5. **Schrottky, C.**—Soziale gewohnheiten bei solitaren insekten. **45,** xxii, 49-57. **Thompson, Caroline B.**—Obituary notice. **72,** ix, 81-82. **Wahlgren, E.**—De europeiska polaroarnas insektfauna des sammansattning och harkomst. **28,** 1920, 1-23.

ANATOMY, PHYSIOLOGY, ETC. Baerg, W. J.—Regarding the habits of tarantulas and the effects of their poison. **91,** xiv, 482-89. **Brown, M.**—Notes on the structure of an endoparasitic watermite larva occurring in frogs. (Washington Univ. Studies, ix, 291-308.) **Bryk, F.**—Grundzuge der sphragidologie. **87,** xi, No. 18. **Carpenter & Pollard**—The presence of lateral spiracles in the larva of Hypoderma. (Proc. R. Irish Acad., xxxiv, B. 73-84.) **Crampton, G. C.**—Evidences of relationship indicated by the venation of the fore wings of certain insects with especial reference to the Hemiptera-Homoptera. **5,** xxix, 23-41. **v. Emden, F.**—Beitrag zur kennzeichnung der holometabolen (heteromophen) insektenlarven. **52,** liv, 231-5. **Fassl, A. H.**—Einige kritische bemerkungen zu J. Robers "Mimikry und verwandte erscheinungen bei schmetterlingen." **114,** xxxix, 15-16. **Gaschott, O.**—Zur phylogenie von Psithyrus. **52,** liv, 225-31. **Genieys, P.**—Sur le determinisme des variations de la coloration chez un Hymenoptere parasite. **77,** lxxxvi, 767-70. **Heikertinger, F.**—Die wespenmimikry oder sphekoidie. **125,** lxx, 316-385. **Heselhaus, F.**—Die hautdrusen der apiden und verwandter formen. **89,** Ab. f. Anat., xliii, 369-464. **Hess, W. N.**—Origin and development of the light-organs of Photurus pennsylvanica. **70,** xxxvi, 245-77. **Kreuscher, A.**—Der fettkorper und die oenocyten von Dytiscus marginalis. **104,** cxix, 247-84. **Lienhart, R.**—Le mechanisme de la stridulations chez Cyrtaspis scutata. **24,** xc, 156-60. **Petrunkevitch, A.**—The circulatory system and segmentation in Arachnida. **70,** xxxvi, 157-89. **de Peyerimhoff, P.**—Etudes sur les larves des coleopteres. I. **24,** xc, 97-111. **Reh, L.**—Die wespenmimikry der Sesien. **125,** lxx, 99-112. **Roubaud, E.**—Sommeil d'hiver cedant a l'hiver

chez les larves et nymphes de Muscides. **69,** clxxiv, 964-6. **Van der Heyde, H. C.**—On the respiration of Dytiscus marginalis. **85,** xxxv, 335-52. **Walker, E. M.**—The terminal structures of orthopteroid insects: a phylogenetic study. Part 2. **7,** xv, 1-88. **Wolff, B.**—Schlammsinnesorgane (pelotakische organe) bei Limnobiinenlarven. (Jenaische Zeit. f. Naturw., lviii, 77-144.)

ARACHNIDA, ETC. Ewing, H. A.—Three new species of peculiar and injurious spider mites. **10,** xxiv, 104-8.

NEUROPTERA. Sjostedt, Y.—Wissenschaftliche ergebnisse der schwedischen entomologischen reise der D. A. Roman in Amazonas. Odonata. **87,** xi, No. 15.

Watson, J. R.—New Thysanoptera from Florida. XI. Another new thrips from cocoanuts from Cuba. **39,** v, 65-6; 66-7. **Williamson, E. B.**—Notes on Celithemis with descriptions of two new species. **88,** No. 108.

ORTHOPTERA. Criddle, N.—Manitoba grasshoppers. (Can. Field-Nat., xxxvi, 41-44, 66-8.)

HEMIPTERA. Barber & Ellis—Eggs of three Cercopidae. **5,** xxix, 1-3. **Drake, C. J.**—The genus Dicysta. (Ann. Carnegie Mus., xiii, 269-73.) **Mason, A.**—Life history studies of some Florida Aphids. **39,** v, 53-9, 62-5.

Barber, H. G.—Two new species of Reduviidae from the U. S. **10,** xxiv, 103-4. **Sanders & DeLong**—New species of Cicadellidae from the eastern and southern U. S. **10,** xxiv, 93-102.

LEPIDOPTERA. Caudell, A. N.—Change of authorship of certain Noctuids. **15,** x, 112.

Barnes & Lindsey—A review of some generic names in the order Lepidoptera. **7,** xv, 89-99. **Cassino & Swett**—Two new species of Sericosema. Some new Geometrids. **16,** iii, 151-55; 155-58. **Wright, W. S.**—A new Lycaenid. **139,** xxi, 19-20.

DIPTERA. Crumb, S. E.—A mosquito attractant. **68,** lv, 446-7. **Alexander, C. P.**—The biology of the North American crane-flies. VI. The genus Cladura. **13,** xiv, 1-6. Undescribed species of Costa Rican flies belonging to the family Tipulidae in the U. S. Nat. Mus. **50,** lx, Art. 25. **Patton, W. S.**—Notes on the species of the genus Musca. **22,** xii, 411-26. **Pawan, J. L.**—The oviposition of Joblotia digitalis. **15,** x, 63-5. **Ping, C.**—The biology of Ephydra subopaca. (Cornell Univ. Agr. Expt. Sta., Mem. 49.) **Thompson, W. R.**—On the taxonomic value of larval characters in tachinid parasites. **10,** xxiv, 85-93.

Dyar, H. G.—The American Aedes of the scapularis group. Two mosquitoes new to the mountains of California. Illustrations of the

male hypopygium of certain Sabethids. The mosquitoes of the Palaearctic and Nearctic regions. The mosquitoes of the Glacier National Park, Montana. Mosquito notes. **15,** x, 51-60; 60-61; 61-62; 65-75; 80-8; 92-9. **Garrett, C. B. D.**—Two new Blepharoceridae. A meristic variation. **15,** x, 89-91; 91. **Hine, J. S.**—Descriptions of Alaskan diptera of the family Syrphidae. **82,** xxii, 143-7.

COLEOPTERA. Aurivillius, C.—Coleopterorum catalogus. Pars 73: Cerambycidae Lamiinae I. **Comstock, J. A.**—A giant palm-boring beetle (Dinapate wrightii). **139,** xxi, 5-17. **Cros, A.**—Notes sur les larves primaires des Meloidae avec indication de larves nouvelles. **24,** xc, 133-55. **Hustache, A.**—Nouveaux Ceuthorrhynchini de l'Amerique du Sud. **24,** xc, 112-32. **Kleine, R.**—Wissenschaftliche ergebnisse der schwedischen entomologischen reise des A. Roman in Amazonas 1914-15. Brenthidae. **87,** xiii, No. 12. **Montet, G.**—Thynnides nouveau du Museum d'Histoire Nat. de Geneve. **80,** xxix, 177-226. **Pic, M.**—Melanges exotico-entomologiques. Fasc. 35. [many So. American species described]. **Sicard, Dr.**—Descriptions de varietes, especes et genres nouveaux appartenant a la famille des Coccinellides. **11,** ix, 349-60. **Watson, J. R.**—Some beetles new to Florida. **39,** v, 67-8. **Weise, J.**—Wissenschaftliche ergebnisse der schwedischen entomologischen reise des A. Roman in Amazonas. Chrysomelidae. **87,** xiv, No. 1.

Frost, C. A.—A new species of New England C. (Cantharis). **5,** xxix, 4-6.

HYMENOPTERA. Cockerell, T. D. A.—Descriptions and records of bees. XCIII. **11,** ix, 360-7. **Kahl, H.**—Notes on some species of Chalcidoidea in the Carnegie Museum. (Ann. Carnegie Mus., xiii, 265-8.) **Ramme, W.**—Zur lebensweise von Pseudagenia. **140,** 1920, 130-32. **Roman, A.**—Schlupwespen aus Amazonien. **87,** xi, No. 4. **Ruschka, F.**—Chalcididenstudien. **125,** lxx, 234-315.

Brues, C. T.—The Embolemid genus Pedinomma in North America. **5,** xxix, 6-8. **Cockerell, T. D. A.**—Bees in the collection of the U. S. Nat. Mus. **50,** lx, Art. 18. Bees of the genus Panurginus obtained by the American Museum Rocky Mountain expeditions. **138,** No. 36. **Cushman, R. A.**—New species of ichneumon-flies with taxonomic notes. **50,** lx, Art. 21. **Enderlein, G.**—Symphytologica I. Zur kenntnis der Oryssiden und Tenthrediniden. **140,** 1919, 111-27. **Gahan, A. B.**—A new hymenopterous parasite upon adult beetles. **82,** xxii, 140-2. **Kinsey, A. C.**—New Pacific coast Cynipidae. **62,** xlvi, 279-95. **Timberlake, P. H.**—A revision of the chalcid-flies of the encyrtid genus Chrysoplatycerus. **50,** lxi, Art. 2.

Doings of Societies.

The American Entomological Society

Meeting of June 6, 1921, at The Academy of Natural Sciences of Philadelphia. Twelve persons present, Dr. Skinner presiding.

ODONATA.—Dr. Calvert exhibited specimens of the true *Gomphus dilatatus* Rambur which has been found only in Georgia and Florida; also specimens from Weaver, Perry County, Pennsylvania (by the late Erich Daecke) and other northern states, which have passed for *dilatatus* but are specifically distinct and for which the name *lineatifrons* is proposed; also specimens of *G. vastus* Walsh which is the northern and smaller representative of the true *dilatatus*. The differences between these three were briefly discussed. [The full statement appears in a paper which has since been published in the *Transactions* of the Society, xlvii, pp. 221-232.] He remarked that *vastus* is a smaller form than *dilatatus* and asked for discussion on this point. Mr. Rehn said that in birds and mammals southern forms were smaller, while in grasshoppers they were larger. Mr. Hebard spoke on possible influence of richness of vegetation on size and remarked that the same influence is seen in ascending mountains.

LEPIDOPTERA.—Dr. Skinner stated that in butterflies the southern forms were larger and that *Papilio turnus* in Alaska was but half the size of those in the southern states. He discussed the various forms of *turnus* and whether they are species or not.

Mr. Hebard remarked that two forms might be distinct in two localities and yet converge to the area where intermediates are found. When the opposite is true there is no change even though the species are quite similar. In such cases they change from one form to the other without overlapping. Mr. Rehn remarked that the area of intergradation is usually narrow and that forms do not gradually merge over extensive territories.

Comments by Mr. Williams followed. Mr. Laurent noticed that Florida forms of Lepidoptera were usually larger. Dr. Skinner stated that there was plenty of food for *turnus* there, cherry and tulip poplar.

ORTHOPTERA.—Mr. Rehn exhibited specimens of the two species of *Hemimerus* and made some remarks on the family Hemimeridae, touching on the structure, habits and distribution of the species and the history of our knowledge of these remarkable insects.—DAVID HARROWER, *Recording Secretary.*

Meeting of October 26, 1921, at the Academy of Natural Sciences of Philadelphia. Members present, 8 and one visitor, Dr. Skinner presiding.

LEPIDOPTERA.—Mr. Davis presented a colony of cocoons of *Apanteles lacteicolor* Vier., a parasite of the Gypsy and Brown Tail Moths in New England, and he spoke of the introduction of these parasites in 1914-1916, and the apparent success of various parasites introduced for these

pests. Dr. Skinner spoke about his researches in the Hesperidae, particularly his genitalic studies of that family, and exhibited outline sketches showing the various forms of these organs in a number of species.

ORTHOPTERA.—Mr. Hebard exhibited specimens of the Blattid genus *Prosoplecta* from the Philippine Islands which mimic species of the Coleopterous family Coccinellidae. He also spoke of the peculiar Orthopterous fauna of that part of the world. Mr. Rehn made a few remarks on the West Indian species of the Blattid genus *Nyctibora*, dwelling particularly upon the history of *N. laevigata*, which remained virtually unrecognized for over one hundred years after it was originally described. The series of the genus from the collection was exhibited.

General discussion, especially by Messrs. Hebard and Rehn and Cresson as to the generic value of certain characters, followed. A point brought out in the discussion was that a generic character may not necessarily be present in all species of the genus.—E. T. CRESSON, JR., *Recording Secretary pro tem.*

Meeting of December 12, 1921, at the same place. Eight members and contributors and Mr. T. H. Frison, of Riverton, visitor, present, President Skinner presiding.

The President gave an interesting reminiscence of his nearly forty years' connection with this Society as a member; of the meetings and their attendances, communications, and of the persons he knew and had been associated with during the early years.

A letter from the Consulate General of Finland was read in which mention was made that Mr. B. W. Heikel, Jardin Botanico, Asuncion. Paraguay, would like to correspond with any person wishing collections of Natural History specimens from Paraguay.

Mr. Rehn moved that the thanks of the Society be extended to Dr. Robert G. LeConte for a gift of the letters of his father, Dr. John L. LeConte.

Mr. Rehn moved that the meetings during 1922 be held as follows: Fourth Thursdays of February, April and October, and on the second Monday of December. Adopted.

The following officers and committees were elected to serve during 1922: *President*, Henry Skinner, M.D., Sc.D.; *Vice-President*, James A. G. Rehn; *Corresponding Secretary*, Morgan Hebard; *Recording Secretary*, Roswell C. Williams, Jr.; *Treasurer*, Ezra T. Cresson.

Publication Committee, James A. G. Rehn (Chairman and Editor), Ezra T. Cresson, Philip P. Calvert, Ph.D.

Finance Committee, Morgan Hebard (Chairman), David M. Castle, M.D., James A. G. Rehn.

Property Committee, Ezra T. Cresson, Jr. (Librarian and Custodian), Morgan Hebard and Philip Laurent.—E. T. CRESSON, JR., *Recording Secretary pro tem.*

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.

I will collect material in any order, region Isthmus of Tehuantepec and C. A. Correspondence from persons needing material invited. J. J. White, Ocotlan de Morelos, Oaxaca, Mexico.

Wanted.—Diabrotica longicornis Say. from all parts of its range; also any N. A. species of this genus new to my collection. Liberal exchange. K. F. Chamberlain, Cornwall Bridge, Connecticut.

Wanted.—Elateridae from the Southern and Western States; Adelocera, Melanotus, and Cardiophorus especially desired. Liberal exchange in other Coleoptera, or for cash. Edward D. Quirsfeld, Hillsdale, New Jersey.

Halticini wanted in exchange for Coleoptera or insects of other orders.—L. G. Gentner, 213 Bailey St., East Lansing, Mich.

For Exchange—A large number of the living pupae of European Sphingidae for the living pupae of American butterflies and moths. I. C. Cheesman, Curator of Insects, Zoological Society of London, Regents Park, London, N. W., England.

Wanted—Species of Homoptera, Hemiptera and Orthoptera not represented in my collection in exchange for duplicate material of these orders from South Dakota. List of duplicates on application. H. C. Severin, South Dakota State College, Brookings, South Dakota.

Buprestidae, Cleridae, and **Carabinae** wanted from U. S. or Buprestidae of the world. Will collect insects of any group (except Lepidoptera) in exchange or pay cash. Alan S. Nicolay, 416a Grand Ave., Brooklyn, New York.

For Exchange—A large number of live cocoons of Callosamia promethea, C. cynthia and P. cecropia for other pupae or Lepidoptera. D. C. Heim, Sunbury, Pa.

Wanted to Exchange—N. A. Coleoptera for same not in my collection. Carl Selinger, 4419 Dover St., Chicago, Ill.

Wanted for Cash or Exchange—Catocala eggs, also brilliant colored butterflies and moths for trays. Mrs. Robert Milde, Lewiston, Minn.

Syrphidae from all parts of North America wanted. Monographing the family.—C. H. Curran, Department of Entomology, University of Kansas, Lawrence, Kansas.

Will collect in all orders except Lepidoptera, in exchange for Cerambycidae (longicorn beetles) and Pentatomidae (stink-bugs). G. Chagnon, P. O. Box 521, Montreal, Canada.

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COLEOPTERA

815.—**Fall** (H. C.).—The North American species of Gyrinus. (Trans., **47**, 269-306, 1 pl., 1922)..... .80

DIPTERA

818.—**Cresson** (E. T., Jr.)—Studies in American Ephydridae III. A revision of the species of Gymnopa and allied genera constituting the sub-family Gymnopinae. (Trans., **47**, 325-343, 1 pl., 1922)..... .45

ORTHOPTERA

817.—**Hebard** (M).—The janeirensis group of the genus Euborellia, with the description of a new species. (Dermaptera). (Trans., **47**, 319-324, 2 pls., 1922).... .20

816.—**Rehn** (J. A. G.).—Studies in Costa Rican Dermaptera and Orthoptera. I. Two new genera and three new species of Dermaptera. (Trans., **47**, 307-313, 1 pl., 1922) .20

The American Entomological Society has placed in operation a system by which entomologists who are not situated near the larger reference libraries, or who desire to build up special entomological libraries of their own and yet do not care to subscribe to the annual volume of the Society's "Transactions," may secure copies of the papers appearing in the Society's publications promptly after their receipt from the press.

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